

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): <b>Silver et al.</b>	
Serial No.: <b>to be determined</b>	Group Art Unit: <b>2621</b>
Filed: <b>11/10/2003</b>	Examiner: <b>Mariam, Daniel G.</b>
Title: <b>Fast High-Accuracy Multi-Dimensional Pattern Inspection</b>	
Attorney Docket No.: <b>C97-050_CON8</b>	

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Dear Sir:

This Information Disclosure Statement is submitted:

X under 37 CFR 1.97(b), or  
(Within three months of filing national application; or date of entry of international application; or before mailing date of first office action on the merits; whichever occurs last)

— under 37 CFR 1.97(c) together with either a:  
— Statement under 37 CFR 1.97(e), or  
— a \$180.00 fee under 37 CFR 1.17(p), or  
(After the CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)

— under 37 CFR 1.97(d) together with a:  
— Statement under 37 CFR 1.97(e), and  
— a \$180.00 fee set forth in 37 CFR 1.17(p).  
(Filed after final action or notice of allowance, whichever occurs first, but before payment of the issue fee)

X Applicant(s) submit herewith Form PTO 1449-Information Disclosure Citation together with copies, of patents, publications or other information of which applicant(s) are aware, which applicant(s) believe(s) may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 CFR 1.56.

The relevance of the attached references is that this is the closest art of which Applicant is aware.

Applicant submits that the above references taken alone or in combination neither anticipate nor render obvious the present invention. Consideration of the foregoing in relation to this application is respectfully requested.

It is requested that the information disclosed herein be made of record in this application.

Respectfully submitted,

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or the correspondence is being facsimile transmitted to the USPTO, on the date indicated below.

Date of Deposit: 11/10/03

Typed Name: Cheryl Sloane

Signature:



  
\_\_\_\_\_  
Arthur J. O'Dea  
Attorney/Agent for Applicant(s)  
Reg. No. 42,952  
**Customer Number 23459**  
Date: November 10, 2003

Telephone No.: (508) 650-3108

Please type a plus sign (+) inside this box

→

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				Application Number	Not Known
				Filing Date	11/10/2003
				First Named Inventor	Silver et al.
				Group Art Unit	2621
				Examiner Name	D. Mariam
Sheet	1	of	3	Attorney Docket Number	C97-050 CON8

## U.S. PATENT DOCUMENTS

## FOREIGN PATENT DOCUMENTS

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Please type a plus sign (+) inside this box →

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute for form 1449B/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

2

of

3

### Complete if Known

Application Number	Not Known
Filing Date	11/10/2003
First Named Inventor	Silver, et al.
Group Art Unit	2621
Examiner Name	D. Mariam

Attorney Docket Number C97-050 CON8

### OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		COGNEX CORPORATION, "Description Sobel Search," Natick, MA USA, 1998 but public before the above-referenced filing date.	
		COGNEX CORPORATION, "Chapter 7 CONLPAS," Cognex 3000/4000/5000 Programmable Vision Engines, Vision Tools, 1996, pp. 307-340, Revision 7.4 590-0136, Natick, MA USA	
		HU, YU HEN, "CORDIC-Based VLSI Architectures for Digital Signal Processing," IEE Signal Processing Magazine, July 1992, pp. 16-35, 1053-5888/92, USA	
		HU, et al, "Expanding the Range of Convergence of the CORDIC Algorithm," IEEE Transactions on computers, January 1991, pp. 13-21, Vol. 40, No. 1, USA	
		Ballard, D.H., "Generalizing the Hough Transform to Detect Arbitrary Shapes," Pattern Recognition, 1981, pp. 111-122, Vol. 13, No. 2, Pergaman Press Ltd., UK	
		LIN, et al., "On-Line CORDIC Algorithms," IEEE Transactions on Computers, pp. 1038-1052, Vol. 39, No. 8, USA	
		WALLACK, AARON SAMUEL, "Chapter 4 Robust Algorithms for Object Localization," Algorithms and Techniques for Manugacturing, 1995, pp. 97-148 (and Bibliography pp. 324-335) PhD thesis, University of California at Berkeley, USA	
		JAMES D. FOLEY, ANDRIES VAN DAM, STEVEN K. FEINER, JOHN F. HUGHES, Second Edition in C, Introduction to Computer Graphics, pp. 36-49, Addison-Wesley Publishing Company, 1994, USA	
		LISA GOTTESFELD BROWN, <u>A Survey of Image Registration Techniques</u> , Department of Computer Science, Columbia University, New York, NY 10027, ACM Computing Surveys, Vol. 24, No. 4, December 1992	
		GUNILLA BORGEFORS, <u>Hierarchical Chamfer Matching: A Parametric Edge Matching Algorithm</u> , IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 10, No. 6, November 1988	

Examiner Signature	Date Considered
--------------------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Substitute for form 1449B/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>					
<i>(use as many sheets as necessary)</i>					
Sheet	3	of	3		
				Attorney Docket Number	C97-050_CON8

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			
		DANIEL P. HUTTENLOCHER AND WILLIAM J. RUCKLIDGE, <u>A Multi-Resolution Technique for Comparing Images Using the Hausdorff Distance</u> , Department of Computer Science, Cornell University, Ithaca, NY 14853,			
		I.J. COX AND J.B. KRUSKAL (AT&T Bell Laboratories, Murray Hill, NJ), <u>On the Congruence of Noisy Images to Line Segment Models</u> , IEEE, 1988			
		DANIEL P. HUTTENLOCHER, GREGORY A. KLANDERMAN AND WILLIAM J. RUCKLIDGE, <u>Comparing Images Unsing the Hausdorff Distance</u> , IEEE Transaction on Pattern Analysis and Machine Intelligence, Vo. 15, No. 9, September 1993			
		AKINORI KAWAMURA, KOJI YURA, TATSUYA HAYAMA, YUTAKA HIDAI, TADATASHI MINAMIKAWA, AKIO TANAKA AND SHOICHI MASUDA, <u>On-line Recognition of Freely Handwritten Japanese Characters Using Directional Features Densities</u> , IEEE 1992			

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450